

AMENDMENTS TO THE DRAWINGS:

The attached sheet of drawings includes changes to Figure 2A. Figure 2A has been modified to replace 201-P with 201-p, 210-P with 210-p, and 220-P with 220-p for one component as indicated in the attached annotated sheet.

Attachments: Annotated Sheet showing changes
 • Replacement Sheet

REMARKS

Claims 1-11, 13-17, 19-35, and 37-52 are pending in the above identified application. The Examiner has rejected claims 1-11, 13-17, 19-35, and 37-52. Applicant has amended claims 1, 19, 27, 33, 34, 44, 45, 46, and 52 to further clarify the invention. No new matter has been added in these amendments.

Objections to the Drawings

The Examiner has objected to the drawings because “reference character ‘201-P, 210-P, 220-P’ has been used to designate different transceivers in Fig. 2A.” Figure 2A has been amended to clearly indicate that elements 201-p, 210-p, and 220-p designate an arbitrary one of elements 201-1 through 201-P, elements 210-1 through 210-P, and elements 220-1 through 220-P, respectively. Applicant requests that the Examiner remove the objection to the drawings.

Objections to the Claims

The Examiner has objected to claim 33 and suggests replacing the word “filter” in line 1 with “filtering.” Applicant has amended claim 33 as suggested by the Examiner.

Claim Rejections under 35 U.S.C. § 112

The Examiner has rejected the pending claims under 35 U.S.C. § 112, second paragraph, “as failing to set forth the subject matter which applicant(s) regard as their invention.” As stated by the Examiner,

[e]vidence that claims 1-50 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in the specification, pg. 12, paragraph [0012], pg. 10, paragraph [0039], pg. 8, paragraph [0034]. Each of these paragraphs cite that the transmission channel can be any transmission channel, including, “optical channels, wireless channels or metallic conductor

channels”. In applicant’s reply filed 12 August 2005, applicant has amended independent claims 1, 27, 44, and 46 to limit the invention to channels on a “conducting medium” which is different from what is defined in the specification.

(Office Action, page 3).

Applicant believes that this is an improper rejection. Adding a limitation to the claims during prosecution does not make the claims indefinite under 35 U.S.C. § 112, second paragraph, even if the added limitation results in a claim scope that is less than the full scope of the disclosure. Limiting the scope of the claims beyond those originally filed, which means limiting the scope of the claims beyond the scope provided in the original specification, can not make the claim indefinite unless applicant also has provided a description outside of the originally filed specification that implies that the claim, as limited, would have a broader scope than that provided. MPEP § 706.03(d). As stated in MPEP §2172,

A rejection based on the failure to satisfy this requirement is appropriate only where applicant has stated, somewhere other than in the application as filed, that the invention is something different from what is defined by the claims. In other words, the invention set forth in the claims must be presumed, in the absence of evidence to the contrary, to be that which applicants regard as their invention. In re Moore, 439 F.2d 1232, 169 USPQ 236 (CCPA 1971).

Further, “[t]he second paragraph of 35 U.S.C. 112 does not prohibit applicants from changing what they regard as their invention during the pendency of the application.” MPEP § 2172 (citing In re Saunders, 444 F.2d 599, 170 USPQ 213 (CCPA 1971)).

Applicant has not described the scope of these claims other than in the specification, and certainly has not stated anywhere other than the specification that the invention is other than that presented in the claims. Therefore, this rejection is improper.

Claim Rejections Under 35 U.S.C. § 102

The Examiner has rejected claims 1-2, 13-16, 19, and 23 under 35 U.S.C. § 102(3) as being anticipated by Lindholm (U.S. Patent 6,477,207). However, Lindholm does not teach “wherein the receiver includes a down-conversion circuit corresponding to each of the K frequency separated channels that down converts to a base-band signal in a single step.”

As illustrated in Figure 9c of Lindholm, the receiver taught by Lindholm is a multi-stage frequency demodulator. Filter 9b shows a halfband filter bank for the receiver. As described in the specification, “the filter bank of the receiver separates the carriers of the FDM signal connected to the input of the filter bank onto their separate outputs, simultaneously carrying out the frequency shifts.” (Lindholm, 9:17-21). Therefore, Lindholm only teaches a receiver with a multi-stage down conversion process and not “a down-conversion circuit . . . that down-converts to a base-band signal in a single step.”

Therefore, claim 1 is allowable over Lindholm. Claims 2, 13-16, 19, and 23 depend, either directly or indirectly, from claim 1 and are therefore allowable for at least the same reasons as is claim 1.¹

Claim Rejections Under 35 U.S.C. § 103

Claims 3, 6, and 9

The Examiner has rejected claims 3, 6, and 9 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm as applied to claim 2 above in view of Applicant’s Admitted Prior Art. As discussed above, claim 2 is allowable over Lindholm. Claims 3-9, which depend from

¹The Examiner has made numerous comments regarding the claims and the prior art. Applicant does not automatically agree with or acquiesce in these comments even if the Examiner’s comments are not explicitly discussed in this response.

claim 2, are therefore allowable for at least the same reasons as is claim 2. Applicants "Admitted Prior Art" does not cure the defects in the teachings of Lindholm.

Claims 4, 5, and 7

The Examiner has rejected claims 4, 5, and 7 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm in view of Applicant's Admitted Prior Art as applied to claim 3 above, and further in view of Rowan et al. (U.S. Patent No. 6,407,843). Claim 3 is allowable over Lindholm in combination with Applicant's Admitted Prior Art as discussed above. Rowan does not cure the defects in the teachings of Lindholm and Applicant's Admitted Prior Art. Therefore, claims 4, 5, and 7, which depend from claim 3, are allowable over the combination of Lindholm, Applicant's Admitted Prior Art, and Rowan.

Additionally, Rowan is inapplicable to claims directed to transmission over a conducting transmission medium, as is recited in claim 1, because Rowan is directed to an optical system.

Claim 8

The Examiner has rejected claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm in view of Applicant's Admitted Prior Art and further in view of Rowan as applied to claim 4 above and further in view of Miller et al. (U.S. Patent 5, 930,231). As discussed above, claim 4 is allowable over the combination of Lindholm, Applicant's Admitted Prior Art, and Rowan. Miller does not cure the defects in those teachings. Therefore, claim 8, which depends from claim 4, is allowable over Lindholm, Applicant's Admitted Prior Art, Rowan, and Miller.

Claims 10 and 11

The Examiner has rejected claims 10 and 11 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm as applied to claim 1 in further view of Applicant's Admitted Prior Art. As discussed above, claim 1 is allowable over Lindholm. Applicant's Admitted Prior Art does not cure the defects in the teachings of Lindholm. Therefore, Claims 10 and 11, which depend from claim 1, are allowable over the combination of Lindholm and Applicant's Admitted Prior Art for at least the same reasons as is claim 1.

Claim 17

The Examiner has rejected claim 17 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm as applied to claim 15 above in view of Applicant's Admitted Prior Art. As discussed above, claim 15 is allowable over Lindholm. Applicant's Admitted Prior Art does not cure the defects in the teachings of Lindholm. Claim 17, which depends indirectly from claim 15, is therefore allowable over the combination of Lindholm and Applicant's Admitted Prior Art for at least the same reasons as is claim 15.

Claims 20 and 21

The Examiner has rejected claims 20 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm as applied to claim 19 above and further in view of Rowan. As discussed above, claim 19 is allowable over Lindholm. Rowan does not cure the defects in the teachings of Lindholm. Therefore, claims 20 and 21, which depend from claim 19, are allowable over the combination of Lindholm and Rowan.

Claim 26

The Examiner has rejected claim 26 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm as applied to claim 19 above and further in view of Isaksson et al. (U.S. Patent No. 6,438,174). As discussed above, claim 19 is allowable over Lindholm. Isaksson does not cure the defects in the teachings of Lindholm. Therefore, claim 26, which depends from claim 19, is allowable over the combination of Lindholm and Isaksson for at least the same reasons as is claim 19.

Claims 27, 28, 30, 34-35, and 37

The Examiner has rejected claims 27, 28, 30, 34-35, and 37 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm in view of Applicant's Admitted Prior Art. Claim 27 recites "up-converting each of the K symbols in a single up-conversion step to form an up-converted signal at one of a set of K carrier frequencies." Lindholm teaches away from a transmitter with a single-step up-conversion step. As stated in Lindholm,

a VDSL connection can be implemented in such a way that predetermined frequency bands are allocated to both transmission directions and the data is modulated to the frequency bands of the transmission direction by generating a carrier for each frequency band in a separate modulator, in which the data is modulated in one phase to the final frequency band. The drawback of such a solution is that pulse shaping (interpolation and filtering) and frequency shifting (mixing) must be carried out in the modulator at a high frequency, which requires heavy computation and makes the equipment relatively complex. In the case of a VDSL connection, for example, the pulse shaping and mixing require computation operations to be performed at as high a rate as 30-fold sampling frequency, since some of the carriers are located at high frequencies.

(Lindholm, 2:20-35). Further, Lindholm states that "[t]he idea of the invention is to perform the frequency shift of signals to their final frequency bands by using a halfband filter bank that is computationally a very efficient design." (Lindholm, 2:47-50). As indicated, Lindholm teaches away from a single-step frequency up-conversion in favor of a multi-stage system. Therefore,

there is no motivation to combine Linholm with Applicant's Admitted Prior Art as is suggested by the Examiner. As a result, claim 27 is allowable over the combination of Lindholm and Applicant's Admitted Prior Art. Therefore, claims 28, 30, 34-35, and 37, which depend directly or indirectly from claim 27, are allowable over the combination of Lindholm and Applicant's Admitted Prior Art.

Claims 29 and 31-33

The Examiner has rejected claims 29 and 31-33 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm in view of Applicant's Admitted Prior Art as applied to claim 27 above and in view of Rowan. As discussed above, claim 27 is allowable over the combination of Lindholm and Applicant's Admitted Prior Art. Rowan does not cure the defects in the combination of Lindholm and Applicant's Admitted Prior Art. Therefore, claims 29 and 31-33, which depend from claim 27, are allowable over the combination of Lindholm, Applicant's Admitted Prior Art, and Rowan for at least the same reasons as is claim 27.

Claim 38

The Examiner has rejected claim 38 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Lindholm and Applicant's Admitted Prior Art as applied to claim 34, and further in view of Miller. As discussed above, claim 34 is allowable over the combination of Lindholm and Applicant's Admitted Prior Art. Miller does not cure the defects in that combination. Therefore, claim 38, which depends from claim 34, is allowable over the combination of Lindholm, Applicant's Admitted Prior Art, and Miller for at least the same reasons as is claim 34.

Claims 39 and 43

The Examiner has rejected claims 39 and 43 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm in view of Applicant's Admitted Prior Art as applied to claim 34 and further in view of Rowan. As discussed above, claim 34 is allowable over the combination of Lindholm and Applicant's Admitted Prior Art. Rowan does not cure the defects in that combination. Therefore, claims 39 and 43, which depend from claim 34, are allowable over the combination of Lindholm, Applicant's Admitted Prior Art, and Rowan for at least the same reasons as is claim 34.

Claims 41 and 42

The Examiner has rejected claims 41 and 42 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm in view of Applicant's Admitted Prior Art as applied to claim 34 and further in view of Miller. As discussed above, claim 34 is allowable over the combination of Lindholm and Applicant's Admitted Prior Art. Miller does not cure the defects in the combination of Lindholm and Applicant's Admitted Prior Art. Therefore, claims 41 and 42, which depend from claim 34, are allowable over the combination of Lindholm, Applicant's Admitted Prior Art, and Miller for at least the same reasons as is claim 34.

Claims 46-48 and 51-52

The Examiner has rejected claims 46-48 and 51-52 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm in view of Applicant's Admitted Prior Art. Similar to claim 1 above, claim 46 recites "wherein the receiver portion includes a down-conversion circuit that down converts in a single step." Lindholm does not teach this element. Applicant's Admitted Prior Art does not cure the defects in the teachings of Lindholm. Therefore, claim 46 is

allowable over the combination of Lindholm and Applicant's Admitted Prior Art. Claims 47-48 and 51-52 depend from claim 46 and are therefore allowable over the combination of Lindholm and Applicant's Admitted Prior Art for at least the same reasons as is claim 46.

Claim 49

The Examiner has rejected claim 49 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm as applied to claim 48 above and further in view of Applicant's Admitted Prior Art. As discussed above, claim 48 is allowable over the combination of Lindholm and Applicant's Admitted Prior Art. Claim 49, which depends from claim 48, is allowable over the combination of Lindholm and Applicant's Admitted Prior Art for at least the same reasons as is claim 49.

Claim 50

The Examiner has rejected claim 50 under 35 U.S.C. § 103(a) as being unpatentable over Lindholm in view of Applicant's Admitted Prior Art as applied to claim 49 and further in view of Rowan. As discussed above, claim 49 is allowable over the combination of Lindholm and Applicant's Admitted Prior Art. Rowan does not cure the defects in that combination. Therefore, claim 50, which depends from claim 49, is allowable over the combination of Lindholm, Applicant's Admitted Prior Art, and Rowan.

Claims 44 and 45

The Examiner indicates that claims 44 and 45 are rejected under 35 U.S.C. § 102(e) as being anticipated, or in the alternative under 35 U.S.C. § 103(a) as being obvious, over Lindholm. As indicated by the Examiner, "Lindholm is silent as to encoding." Therefore, the Examiner's suggestion that Lindholm anticipates claim 44 is not correct. Further, as discussed

above with respect to claim 27 above, Lindholm teaches away from a transmitter with a single-step up-conversion process. Claim 44 recites “wherein the means for transmitting includes an up-converter that up-converts in a single step.” Because Lindholm teaches away from this element, and does not teach an encoding, claim 44 is allowable over the teachings of Lindholm. Claim 45, which depends from claim 44, is therefore allowable over Lindholm for at least the same reasons as is claim 44.

Allowable Subject Matter

The Examiner has allowed claims 22, 24-25, and 40, provided that they are rewritten in independent form including all of the limitations of the base claims and any intervening claims, and to overcome the rejections under 35 U.S.C. § 112, second paragraph. As discussed above, the base claims and intervening claims are allowable and the rejections under 35 U.S.C. § 112, second paragraph, have been traversed. Therefore, claims 22, 24-25, and 40 have not been amended to be independent in this paper.

Conclusion

Applicant respectfully requests that this Amendment be entered by the Examiner, placing claims 1-11, 13-17, 19-35, and 37-52 in condition for allowance. Applicant submits that the proposed amendments of claims 1-11, 13-17, 19-35, and 37-52 do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Finally, Applicant respectfully points out that the final action by the Examiner presented some new arguments as to the application of the art against Applicant's invention. It is

respectfully submitted that the entering of the Amendment would allow the Applicant to reply to the final rejections and place the application in condition for allowance.

In view of the foregoing remarks, Applicant submits that this claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicant therefore requests the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

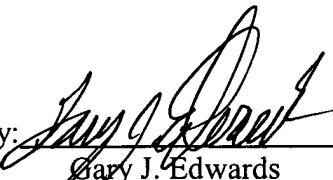
Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: February 15, 2006

By:



Gary J. Edwards
Reg. No. 41,008

Attachments: Annotated Sheet showing changes
Replacement Sheet

EXPRESS MAIL LABEL NO. EV 746094808 US

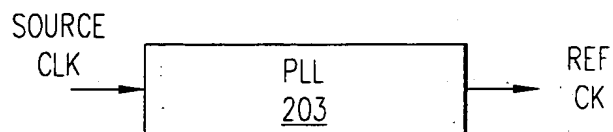


FIG. 2A